BROWNWATER BOTTOMLAND HARDWOODS (LOW SUBTYPE)

Concept: Brownwater Bottomland Hardwoods communities are forests of Coastal Plain floodplain terraces and ridges other than active natural levees, lacking a significant component of levee tree species, and naturally dominated by bottomland oaks, hickories, and sweetgum. The Low Subtype covers examples at intermediate elevations above the river on lower ridges, alluvial flats, and edges of higher ridges. They are dominated by more flood-tolerant species such as *Quercus lyrata, Carya aquatica, Ulmus americana*, and *Quercus laurifolia*. While this subtype conceptually lies between the High Subtype and Swamp Transition Subtype, it is not always developed in recognizable form.

Distinguishing Features: Brownwater Bottomland Hardwoods are distinguished by occurrence on floodplains of brownwater rivers, but away from the riverbank or natural levees, and by dominance by bottomland oaks or sweetgum. The Low Subtype is distinguished from the High Subtype by dominance by *Quercus lyrata, Carya aquatica*, or *Quercus laurifolia*, and absence or low numbers of more mesophytic species such as *Quercus michauxii* and *Quercus pagoda*. *Quercus laurifolia* may be abundant in all subtypes and does not readily distinguish among them.

Synonyms: *Quercus lyrata - Carya aquatica* Forest (CEGL007397).
Ecological Systems: Atlantic Coastal Plain Small Brownwater River Floodplain Forest (CES203.250). Southern Atlantic Coastal Plain Large River Floodplain Forest (CES203.066).

Sites: Brownwater Bottomland Hardwoods occur in the interior of brownwater river floodplains, away from the natural levees and from the active river channel. The Low Subtype occurs on low ridges and flats on active floodplains and potentially on lower parts of terraces.

Soils: Soils of the Low Subtype are generally mapped as alluvial soils such as Chewacla (Fluvaquentic Dystrudept), Bibb (Typic Fluvaqent), Chastain, or Wehadkee (Fluvaquentic Endoaquepts). They tend to be silty or sandy and high in fertility.

Hydrology: The Low Subtype is seasonally to intermittently flooded. Its flood regime is intermediate between the High Subtype and higher Brownwater Levee Forests and the Low Subtype and Cypress–Gum Swamp. When not inundated, the water table may still be high and the soil saturated for significant periods.

Vegetation: The Low Subtype is a forest that is typically dominated by varying combinations of *Quercus laurifolia, Quercus lyrata*, and *Carya aquatica. Acer rubrum* var. *trilobum*, *Liquidambar styraciflua, Ulmus americana*, and *Quercus phellos* are frequent. The understory is generally dominated by *Carpinus caroliniana*, but *Ulmus alata* is also frequent, and *Crataegus viridis, Fraxinus caroliniana,* and *Acer negundo* may also occur. The shrub layer generally is sparse to moderate in density; *Ilex decidua* is the only frequent species. Woody vines are diverse and sometimes extensive, though less so than in the High Subtype. *Smilax rotundifolia, Toxicodendron radicans, Campsis radicans, Nekemias arborea, Parthenocissus quinquefolia, Muscadinia rotundifolia, Smilax bona-nox, Thyrsanthella difforme*, and *Berchemia scandens* are at least fairly frequent, and *Gelsemium semperivrens, Smilax glauca, Smiax walteri*, and several species of *Vitis* are also encountered. The herb layer is usually sparse to moderate but is fairly low in diversity.

Boehmeria cylindrica is the most constant species; it and *Carex* spp. (*ludoviciana, typhinia, tribuloides, lupulina, radiata, abscondita, gigantea, intumescens*, or others) may be abundant. Frequent herbs on at least some rivers include *Saururus cernuus, Mitchella repens, Viola sororia, Leersia virginica,* and *Leersia oryzoides. Tillandsia usneoides* may be abundant on trees.

Range and Abundance: Ranked G4? In North Carolina, the Low Subtype occurs along all of the brownwater rivers and may be in any part of the Coastal Plain. It appears to be rarer than the High Subtype or Swamp Transition Subtype, occupying less area in floodplain community mosaics and less often being present as well-developed examples. The synonymized NVC association ranges to Kentucky and Texas but this probably is a result of uneven treatment and may reflect more limited knowledge and attention. There does not appear to be any reason to expect this wetter bottomland hardwood community to be more widespread than drier ones which are more finely divided and separated by region.

Associations and Patterns: The Low Subtype usually occurs in a mosaic with Cypress–Gum Swamp and sometimes with the High or Swamp Transition Subtype. It may border Brownwater Levee Forest and may border Mesic Mixed Hardwood Forest but more often is separated by wetter communities.

Variation: No variants are recognized at present. This subtype appears to be narrowly defined. However, the distinction between those with *Carya aquatica* and *Quercus lyrata* and those without them warrants investigation.

Dynamics: The dynamics of Brownwater Bottomland Hardwoods are similar to most Coastal Plain Floodplain communities and to many other forests. Flooding does not represent a significant disturbance, but the nutrient enrichment brought by even the infrequent flooding presumably is important.

Some areas of the Low Subtype are susceptible to flooding by beaver ponds, turning them into Coastal Plain Semipermanent Impoundment communities. See the discussion under Coastal Plain Semipermanent Impoundment. Because the trees in this subtype are not tolerant of permanent flooding, the pond will generally develop the Coastal Plain Marsh or Open Water Subtype, even if deeper parts of the pond are the Cypress–Gum Subtype. When a beaver pond is abandoned and drained, it may take some years for the community to return to Bottomland Hardwoods. In addition, deposition of clay in the pond may potentially change the site.

Comments: In North Carolina, this subtype is less common than the other two, and often in smaller patches. As defined, it presumably occupies a narrower segment of the wetness gradient. The vegetation description is less precise and detailed than that for the High Subtype because there are fewer plots and the attribution of them to this subtype is less reliable. Nevertheless, vegetation units that seem equivalent to it were distinguished by both Faestal (2012) and Rice et al. (2001).

References:
Faestal, M. 2012. Classification and description of alluvial plant communities of the North Carolina Coastal Plain. M.S. thesis, University of North Carolina, Chapel Hill.

Rice, S.K., R.K. Peet, and P. Townsend. 2001. Gradient analysis and classification of the forests of the lower Roanoke River floodplain, North Carolina: a landscape perspective. Unpublished manuscript.